

I. IDENTIFICATION DATA

Thesis title:	Perception-driven Multi-Drone Formation Control
Author's name:	Timur Uzakov
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Cybernetics
Thesis reviewer:	Tiago Nascimento
Reviewer's department:	Department of Cybernetics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>How demanding was the assigned project?</i>	
Please insert your comments here.	

Fulfilment of assignment	fulfilled
<i>How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.</i>	
Please insert your comments here.	

Activity and independence when creating final thesis	A - excellent.
<i>Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.</i>	
Please insert your commentary.	

Technical level	A - excellent.
<i>Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?</i>	
Please insert your comments here.	

Formal level and language level, scope of thesis	B - very good.
<i>Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?</i>	
Please insert your comments here.	

Selection of sources, citation correctness	B - very good.
<i>Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?</i>	
Please insert your comments here.	

Additional commentary and evaluation (optional)
<i>Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.</i>
Please insert your comments here.



III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

Summarize your opinion on the thesis and explain your final grading.

The student proposes a perception-driven formation control approach for multiple-object detection using drones. The system is applied for human observation by the formation of drones and in the case of search for multiple objects by a group of UAVs and detection of these objects. The proposed perception system is based on cooperative perception based on Kalman filtering and consensus approach, while the formation control is based on an optimal controller that minimizes a cost function in a distributed fashion.

The student was able to describe the mathematical proposed approach and perform several simulations in a realistic simulation environment, as well as to perform successful real robot experiments. The resulting work has publishable material in high-impact robotics journals which is now being written. With all the above-mentioned statements, I recommend an A as my assessment for this work.

It is important to mention that the results of this Thesis will be used to submit a manuscript to the Robotics and Autonomous Systems Journal, ranked Q2.

The grade that I award for the thesis is A - excellent.

Date: 2.6.2023

Signature: